

CONCEPT APPLICATION LEVEL - II

SECTION - A

• FILL IN THE BLANKS

Q.1 $\frac{-4}{7} + 0 = \dots\dots\dots$

Q.2 $\left(\frac{-8}{13}\right) \times \dots\dots\dots = \left(\frac{-8}{13}\right)$

Q.3 $\dots\dots\dots \times \frac{-17}{47} = 0$

Q.4 $\frac{-4}{3} \times \left[\frac{1}{2} + \left(\frac{7}{5}\right) \right] = \left(\frac{-4}{3} \times \dots\dots\dots \right) + \left(\frac{-4}{3} \times \dots\dots\dots \right)$

Q.5 $\frac{-4}{5} \times \left(\frac{5}{7} \times \frac{-8}{9} \right) = \left(\frac{-4}{5} \times \dots\dots\dots \right) \times \frac{-8}{9}$

Q.6 $\frac{2}{5} \div \frac{2}{5} = \dots\dots\dots$

Q.7 $\frac{-11}{15} \div \left(\dots\dots\dots \right) = -1$

Q.8 $\frac{4}{9} \div \dots\dots\dots = \frac{4}{9}$

Q.9 Write the rational numbers which are their own reciprocals

Q.10 Is subtraction of rational numbers commutative?

Q.11 A rational number between x and y is

Q.12 $\frac{1}{5}$ lies to the left of 0 on a number line. Is this a true statement?

Q.13 How many rational numbers are there altogether between 1 and 2?

Q.14 Additive inverse of -1 is

Q.15 Put suitable word in the sentence below:

$\frac{35}{50}$ has decimal expansion.

Q.16 Number 206.006 0006 00006 is

Q.17 $\sqrt{3} - (\sqrt{8} + \sqrt{5})$ is

Q.18 $(3 - \sqrt{4})^2$ is a

Q.19 If a is a rational number and b ($b \neq 0$) is an irrational number, then ab is necessarily,

Q.20 For given positive integers a and b, there exists unique integers q and r satisfying $a = bq + r$, $0 \leq r < b$ is called

Q.21 Every composite number can be expressed as a product of primes, which is unique, apart from the order in which prime factors occur, is called

- Q.22 For any rational number $\frac{p}{q}$ with terminating decimal representation, the prime factorisation of q is of the form, where n and m are non-negative integers.
- Q.23 Decimal representation of a rational number can not be
- Q.24 A number of the form $\frac{p}{q}$, where p and q are integers and $q \neq 0$, is called a
- Q.25 The rational number is the additive identity for rational numbers.

SECTION - B

• **MULTIPLE CHOICE QUESTIONS**

- Q.1 The value of $(0.\bar{6} + 0.\bar{7} + 0.\bar{8})$ is
 (A) $\frac{21}{10}$ (B) $\frac{19}{9}$ (C) $\frac{7}{3}$ (D) None of these
- Q.2 If $1 \leq p \leq 10$, then number of prime numbers are there which are of the form $10p + 1$, is
 (A) 10 (B) 7 (C) 6 (D) None of these
- Q.3 The absolute value of $|x - 6| + |6 - x|$, when $0 < x < 6$ is
 (A) $6x$ (B) 12 (C) $2(6 - x)$ (D) None of these
- Q.4 Ismail wanted to type 150 natural number. The number of times he had to press the numbered keys, is
 (A) 332 (B) 342 (C) 352 (D) None of these
- Q.5 $\left(\frac{3}{-5} + \frac{2}{-8}\right) + \dots = \frac{3}{-5} + \left(\frac{4}{-7} + \frac{2}{-8}\right)$
 (A) $\frac{2}{-7}$ (B) $\frac{2}{7}$ (C) $\frac{4}{-7}$ (D) $\frac{4}{7}$
- Q.6 $\left(8 + \frac{-6}{17}\right) + \left(\frac{-4}{17}\right) = \left(\dots\right) + \left(\frac{-6}{17} + \frac{-4}{17}\right)$
 (A) $\frac{8}{17}$ (B) 8 (C) $\frac{7}{17}$ (D) 7
- Q.7 The rational number $0.\bar{3}$ can also be written as
 (A) $\frac{3}{10}$ (B) $\frac{33}{100}$ (C) $\frac{1}{3}$ (D) 333

- Q.8 A rational number between $\frac{1}{5}$ and $\frac{2}{5}$ is
- (A) $\frac{3}{5}$ (B) $\frac{30}{100}$ (C) $\frac{32}{6}$ (D) $\frac{20}{15}$
- Q.9 The sum of $-\frac{1}{9}$ and $-\frac{1}{9}$ is
- (A) 0 (B) 1 (C) $\frac{2}{9}$ (D) $-\frac{2}{9}$
- Q.10 The multiplicative inverse of $\frac{1}{6}$ is _____.
- (A) -6 (B) 6 (C) $-\frac{1}{6}$ (D) 1
- Q.11 The rational number equivalent to $\frac{9}{-18}$ is
- (A) $\frac{18}{162}$ (B) $\frac{-81}{162}$ (C) $-\frac{1}{9}$ (D) $\frac{1}{9}$
- Q.12 0 reduced by $\frac{1}{2}$ is
- (A) $\frac{1}{2}$ (B) $-\frac{1}{2}$ (C) 2 (D) -2
- Q.13 If x and y are rational numbers then $|x + y|$ is
- (A) $|x + y| \leq |x| + |y|$ (B) $|x + y| = |x| + |y|$
(C) $|x + y| < |x| + |y|$ (D) $|x + y| \geq |x| + |y|$
- Q.14 $-\left|\frac{3}{4} - \frac{2}{3}\right|$ is equal to
- (A) $\frac{1}{12}$ (B) $-\frac{1}{12}$ (C) $-\frac{17}{12}$ (D) $\frac{17}{12}$
- Q.15 Which of the following statements is false?
- (A) $\left|\frac{-5}{3}\right|$ lies on the right of 0 on the number line.
(B) $-|-x| = x$ for all rational numbers.
(C) $\frac{-7}{17}$ lies on the left of 0 on the number line
(D) Every whole number is a rational number.

Q.16 The additive inverse of $\frac{-a}{b}$ is

- (A) $\frac{b}{a}$ (B) $\frac{a}{-b}$ (C) $\frac{a}{b}$ (D) $\frac{-b}{a}$

Q.17 0 is

- (A) Positive rational number (B) Negative rational number
(C) Either positive or negative rational number (D) Neither positive nor negative rational number

Q.18 If the sum of two rational numbers is -6 and one of them is $\frac{-7}{2}$, then the other number is

- (A) $\frac{-5}{2}$ (B) $\frac{5}{2}$ (C) $\frac{-19}{2}$ (D) $\frac{19}{2}$

Q.19 Which of the following statements is true?

- (A) $\left(\frac{7}{9} - \frac{11}{12}\right) + \frac{2}{3} = \frac{7}{9} - \left(\frac{11}{12} + \frac{2}{3}\right)$ (B) $\left(\frac{8}{15} + \frac{6}{5}\right) - \frac{5}{12} = \frac{8}{15} + \left(\frac{6}{5} - \frac{5}{12}\right)$
(C) $8 - \left(2\frac{3}{5} + 2\frac{5}{12}\right) = 8 - 2\frac{3}{5} + 2\frac{5}{12}$ (D) $\frac{5}{2} - 0 = 0 - \frac{5}{2}$

Q.20 The product of the additive inverse and the multiplicative inverse of -3 is

- (A) 1 (B) 0 (C) -1 (D) -9

Q.21 Which property of multiplication is illustrated by $\frac{-2}{3} \times \left(\frac{5}{8} + \frac{-3}{7}\right) = \left(\frac{-2}{3} \times \frac{5}{8}\right) + \left(\frac{-2}{3} \times \frac{-3}{7}\right)$

- (A) Commutative (B) Distributive (C) Associative (D) None of these

Q.22 A rational number between $\frac{1}{3}$ and $\frac{1}{4}$ is

- (A) 0.09 (B) $\frac{7}{24}$ (C) $\frac{1}{24}$ (D) $\frac{-1}{24}$

Q.23 The difference between the greatest and the least of $\frac{-5}{9}, \frac{2}{9}, \frac{-4}{9}$ is

- (A) $\frac{-1}{3}$ (B) $\frac{-2}{9}$ (C) -1 (D) $\frac{7}{9}$

- Q.24 What should be added to $\frac{-3}{4}$ to get '-1'?
- (A) $\frac{1}{4}$ (B) $-\frac{1}{4}$ (C) 1 (D) $-\frac{3}{4}$
- Q.25 What should be subtracted from $-\frac{3}{4}$ to get '-1'?
- (A) $\frac{1}{4}$ (B) $-\frac{1}{4}$ (C) 1 (D) $-\frac{3}{4}$
- Q.26 Which of the following is the multiplicative identity for rational numbers?
- (A) 1 (B) -1 (C) 0 (D) None of these
- Q.27 Which of the following is neither positive nor a negative rational number ?
- (A) 1 (B) 0
(C) Such a rational number does not-exist (D) None of these
- Q.28 Which of the following rational numbers lies between 0 and -1?
- (A) 0 (B) -1 (C) $-\frac{2}{3}$ (D) $\frac{2}{3}$
- Q.29 Which of the following is the reciprocal of the reciprocal of a rational number ?
- (A) -1 (B) 1 (C) 0 (D) The rational number itself
- Q.30 A train goes 80 km in one hour. How much distance will it cover in 45 minutes?
- (A) 70 km (B) 60 km (C) 50 km (D) 40 km
- Q.31 A man has Rs. 100 with him. He bought $3\frac{1}{2}$ litres of milk at Rs. $16\frac{1}{2}$ per litre. How much money is left with him?
- (A) Rs. $42\frac{1}{4}$ (B) Rs. $42\frac{1}{3}$ (C) Rs. $44\frac{1}{4}$ (D) Rs. $44\frac{1}{3}$
- Q.32 Praneeta bought $3\frac{1}{2}$ m ribbon at Rs. $5\frac{3}{7}$ per metre, $4\frac{3}{4}$ m cloth at Rs. $27\frac{1}{2}$ per metre. How much money did she spend?
- (A) Rs. $140\frac{5}{8}$ (B) Rs. $149\frac{5}{8}$ (C) Rs. $145\frac{5}{8}$ (D) Rs. $140\frac{3}{8}$

Q.33 If $-\frac{8}{17} + \frac{4}{5} = \frac{4}{5} + x$, then x is

- (A) $\frac{4}{5}$ (B) $\frac{8}{17}$ (C) $\frac{8}{5}$ (D) $-\frac{8}{17}$

Q.34 What should be added to $\frac{1}{3} + \frac{1}{5} + \frac{7}{15}$ to get sum 0?

- (A) $-\frac{1}{3}$ (B) -1 (C) $-\frac{1}{5}$ (D) $-\frac{7}{15}$

Q.35 The property $x \times (y + z) = x \times y + x \times z$ is known as

- (A) commutative property (B) closure property
(C) associative property (D) distributive property

Q.36 The number $\frac{11}{3}$ on the number line will be represented between which two consecutive odd natural numbers?

- (A) 1 and 2 (B) 1 and 3 (C) 3 and 4 (D) 3 and 5

Q.37 If $\left(-\frac{4}{9}\right) \div p = \frac{8}{15}$, then p is

- (A) $\frac{15}{8}$ (B) $-\frac{5}{6}$ (C) $-\frac{6}{5}$ (D) $-\frac{4}{9}$

Q.38 If x is a rational number, such that $x \times x = x$, then x is

- (A) x (B) x^2 (C) 1 (D) $\frac{1}{x}$

Q.39 The sum of two rational numbers is $\frac{3}{7}$, if one of the numbers is $-\frac{3}{10}$, then other number is

- (A) $\frac{5}{7}$ (B) $\frac{51}{10}$ (C) $\frac{51}{70}$ (D) $\frac{51}{7}$

Q.40 What number should be subtracted from $-\frac{5}{4}$ to get additive identity?

- (A) $\frac{5}{4}$ (B) $-\frac{5}{4}$ (C) $\frac{6}{7}$ (D) $-\frac{6}{7}$

- Q.41 What number should be added to $-\frac{5}{4}$ to get its multiplicative inverse?
(A) $\frac{4}{5}$ (B) $-\frac{4}{5}$ (C) $\frac{20}{9}$ (D) $\frac{9}{20}$
- Q.42 What should be added to $\left(\frac{1}{2} + \frac{1}{3} + \frac{1}{5}\right)$ to get 1?
(A) $-\frac{31}{30}$ (B) $\frac{31}{30}$ (C) $\frac{1}{30}$ (D) $-\frac{1}{30}$
- Q.43 On dividing the sum of $\frac{18}{5}$ and $-\frac{7}{15}$ by their difference we get
(A) $\frac{47}{61}$ (B) $\frac{61}{47}$ (C) $\frac{47}{15}$ (D) $\frac{61}{15}$
- Q.44 Between two rational numbers -2 and 2 , which whole numbers are there?
(A) $-1, 0$ (B) $0, 1$ (C) $1, 2$ (D) $-2, -1$
- Q.45 What should be subtracted from $\frac{-5}{9}$ to get $\frac{1}{6}$?
(A) $\frac{7}{3}$ (B) $\frac{6}{3}$ (C) $\frac{-13}{18}$ (D) $\frac{-12}{18}$
- Q.46 Write the multiplicative inverse of $\frac{-6}{5} \times \frac{2}{-3}$
(A) 1 (B) $\frac{5}{4}$ (C) $\frac{4}{5}$ (D) 0
- Q.47 Write the additive inverse of $\frac{-5}{6} + \frac{2}{3}$
(A) $\frac{1}{6}$ (B) $\frac{-1}{6}$ (C) 6 (D) -6
- Q.48 Using distributive property, evaluate $\frac{-5}{3} \times \frac{5}{7} - \frac{4}{7} \times \frac{5}{3}$
(A) $\frac{15}{7}$ (B) $-\frac{15}{7}$ (C) $\frac{45}{21}$ (D) $\frac{15}{21}$

- Q.49 The product of two rational numbers is $\frac{-56}{25}$. If one number is $\frac{-8}{15}$, find the other .
- (A) $\frac{42}{10}$ (B) $\frac{21}{4}$ (C) $\frac{42}{5}$ (D) $\frac{21}{10}$
- Q.50 Divide the sum of $\frac{-2}{5}$ and $\frac{5}{4}$ by their difference.
- (A) $\frac{-7}{12}$ (B) $\frac{-17}{33}$ (C) $\frac{22}{20}$ (D) $\frac{-33}{20}$
- Q.51 What number should be added to $\frac{-3}{8}$ to get $\frac{7}{9}$?
- (A) $\frac{83}{72}$ (B) $\frac{29}{72}$ (C) $\frac{-17}{18}$ (D) $\frac{17}{18}$
- Q.52 Subtract the sum of $\frac{-5}{8}$ and $\frac{7}{10}$ from the sum of $\frac{3}{-5}$ and $\frac{8}{15}$.
- (A) $\frac{170}{1200}$ (B) $\frac{-17}{120}$ (C) $\frac{14}{119}$ (D) $\frac{180}{1200}$
- Q.53 A piece of wire $\frac{15}{4}$ m long is broken into pieces. One piece is $2\frac{1}{2}$ m long . Find the length of the other piece
- (A) $\frac{6}{7}$ m (B) $\frac{5}{9}$ m (C) $\frac{5}{4}$ m (D) $\frac{5}{2}$ m
- Q.54 By what number should we multiply $\frac{-12}{13}$ to get $\frac{4}{39}$?
- (A) $\frac{3}{27}$ (B) $\frac{4}{9}$ (C) $-\frac{5}{9}$ (D) $-\frac{1}{9}$
- Q.55 Divide the sum of $\frac{11}{7}$ and $\frac{-7}{5}$ by their product.
- (A) $\frac{1}{11}$ (B) $\frac{-6}{77}$ (C) $\frac{-4}{35}$ (D) $\frac{-11}{5}$
- Q.56 Divide the sum of $\frac{-9}{4}$ and $\frac{-8}{3}$ by the difference of $\frac{13}{8}$ and $\frac{-7}{16}$.
- (A) $\frac{-236}{99}$ (B) $\frac{21}{9}$ (C) $\frac{-27}{11}$ (D) $\frac{5}{8}$

Q.57 The cost of $5\frac{2}{7}$ metres of cloth is Rs. $28\frac{1}{3}$. What is the cost of 1 metre of cloth?

- (A) Rs. $10\frac{1}{10}$ (B) $4\frac{51}{111}$ (C) Rs. $\frac{595}{111}$ (D) $\frac{695}{111}$

Q.58 Find the area of a square piece of land whose each side measures $6\frac{1}{4}$ m.

- (A) $\frac{625}{16}$ m² (B) $\frac{25}{4}$ m² (C) $\frac{605}{16}$ m² (D) $\frac{1205}{32}$ m²

Q.59 The area of a rectangle is $45\frac{1}{2}$ m². If its length is $3\frac{1}{4}$ m, what is its breadth?

- (A) $\frac{15}{2}$ m (B) 7 m (C) 15 m (D) 14 m

SECTION - C

• **Match the Following :**

- | | | | |
|-----|--|-----|---|
| Q.1 | Column I | | Column II |
| | (A) An irrational number between $\sqrt{2}$ and $\sqrt{3}$ is | (p) | $\frac{53}{125}$ |
| | (B) Value of 0.424 is | (q) | $2 - \sqrt{3}$ |
| | (C) If $\sqrt{3} = 1.732$, then value of $(2 + \sqrt{3})$ | (r) | $\frac{\sqrt{2} + \sqrt{3}}{2}$ |
| | (D) Rationalising factor of $(2 + \sqrt{3})$ is | (s) | 3.732 |
| Q.2 | Column I | | Column II |
| | (A) The sum of two irrational numbers is not always | (p) | a rational number |
| | (B) Average of two rational is always | (q) | non-terminating and non-repeating |
| | (C) Decimal representation of $\sqrt{3}$ | (r) | an irrational number |
| | (D) Between any two rational numbers, number of rational number is | (s) | 5 |
| | (E) If $ab = 60$ and HCF of a and b = 12, then LCM of a and b is | (t) | infinite |
| Q.3 | Column I | | Column II |
| | (A) Distributive property of multiplication over addition is | (p) | rational numbers |
| | (B) A rational number which lies between any two rational numbers a and b is | (q) | For any three rational numbers a, b and c; we have $a(b + c) = ab + ac$ |
| | (C) All integers are | (r) | irrational |
| | (D) Square root of all positive prime numbers are | (s) | $\frac{a + b}{2}$ |

Q.4	Column I	Column II
(A)	$\frac{551}{2^3 \times 5^6 \times 7^9}$	(p) is a non-terminating but repeating decimal representation
(B)	$\frac{422}{2^3 \times 5^4}$	(q) is an irrational number
(C)	$\frac{2}{\sqrt{3}}$	(r) is a terminating decimal representation
(D)	$\sqrt{5} - 4$	(s) is a rational number (t) is non-terminating and non-recurring decimal representation

SECTION - D

- **Assertion and Reason**

Direction : Each of these question contains an Assertion followed by Reason. Read them carefully and answer the question on the basis of following options. You have to select the one that best describes the two statements.

- (A) If both **Assertion** and **Reason** are **correct** and Reason is the **correct explanation** of Assertion.
- (B) If both **Assertion** and **Reason** are correct, but Reason is **not the correct explanation** of Assertion.
- (C) If **Assertion** is **correct** but **Reason** is **incorrect**.
- (D) If **Assertion** is **incorrect** but **Reason** is **correct**.
- Q.1 **Assertion:** (3, 5) and (17, 19) are twin prime.
Reason : A pair of primes which differ by 2 are called twin primes.
- Q.2 **Assertion:** Sum of two irrational number $(2 - \sqrt{5})$ and $(2 + \sqrt{5})$ is also an irrational number.
Reason : Sum of two irrational number need not be an irrational number.
- Q.3 **Assertion:** $5\sqrt{3}$ is an irrational number.
Reason : For any two given integers a and b there exist unique integers q and r satisfying $a = bq + r; 0 \leq r < b$.